REMARKS

Claims 13 to 29 are pending in the present application.

In view of the foregoing amendments and the following remarks, it is respectfully submitted that all of the presently pending claims are allowable, and reconsideration is therefore respectfully requested.

With respect to paragraph five (5) of the Office Action, claims 25 to 28 were objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

While the objections may not be agreed with, to facilitate matters, claim 25 has been rewritten to include all of the features of original claim 13, and it is therefore allowable, as are its dependent claims 26 to 28. Claim 26 is also rewritten to correct the claim. Accordingly, claims 25 to 28 are allowable, and it is therefore respectfully requested that the objections be withdrawn.

With respect to paragraph two (2) of the Office Action, claims 13 to 23 were rejected under 35 U.S.C § 102(b) as being anticipated by U.S. Patent No. 1,988,754 ("Sleffel").

To reject a claim under 35 U.S.C. § 102(b), the Office must demonstrate that each and every claim feature is identically described or contained in a single prior art reference. See *Scripps Clinic & Research Foundation v. Genentech, Inc.*, 18 U.S.P.Q.2d 1001, 1010 (Fed. Cir. 1991). As explained herein, it is respectfully submitted that the Office Action does not meet this standard, for example, as to all of the features of the claims. Still further, not only must each of the claim features be identically described, an anticipatory reference must also enable a person having ordinary skill in the art to practice the claimed invention, namely the claimed subject matter of the claims, as discussed herein. See *Akzo, N.V. v. U.S.I.T.C.*, 1 U.S.P.Q.2d 1241, 1245 (Fed. Cir. 1986).

As further regards the anticipation rejections, to the extent that the Final Office Action may be relying on the inherency doctrine, it is respectfully submitted that to rely on inherency, the Examiner must provide a " basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic *necessarily* flows from the teachings of the applied art." See M.P.E.P. § 2112 (citing *Ex parte Levy*, 17 U.S.P.Q.2d 1461, 1464 (Bd. Pat. App. & Int'f. 1990) (emphasis in original)). Thus, the

M.P.E.P. and the case law make clear that simply because a certain result or characteristic may occur in the prior art does not establish the inherency of that result or characteristic.

While the objections may not be agreed with, to facilitate matters, claim 25 has been rewritten to better clarify the claimed subject matter.

In particular, claim 13, as presented, is directed to a fuel-injection system for direct injection of fuel into a combustion chamber through a combustion-chamber top located opposite from a piston, and includes a fuel injector having a plurality of spray-discharge orifices discharging a corresponding plurality of fuel jets, wherein the plurality of fuel jets form a spray cloud in the combustion chamber, in which a first opening angle of the spray cloud along a first cross-sectional plane bisecting the longitudinal axis of the fuel injector is greater than a second opening angle of the spray cloud along a second cross-sectional plane bisecting the longitudinal axis of the fuel injector, the second cross-sectional plane extending perpendicular to the first cross-sectional plane, and in which *the first opening angle of the spray cloud along the first cross-sectional plane bisecting the longitudinal axis of the fuel injector and the second opening angle of the spray cloud along the second cross-sectional plane bisecting the longitudinal axis of the fuel injector are symmetrical about the longitudinal axis of the fuel injector*.

It is believed and respectfully submitted that the Sleffel reference does not identically disclose (or suggest) the feature of two such opening angles of spray, symmetrical about the longitudinal axis of the fuel injector, as provided for in the context of the presently claimed subject matter. The Office Action conclusorily asserts that spray holes 7 and holes 11 of the Sleffel reference somehow supposedly disclose a plurality of spray-discharge orifices discharging a corresponding plurality of fuel jets.

In fact, however, the Steffel reference, indicates, for example, at column 3, lines 59 to 66, that spray 9 make a narrow angle of 45 degrees with respect to the cylindrical axis, and auxiliary jets 10 and 10a make a wide angle of 72½ degrees. Auxiliary jets 10 and 10a, as described, for example, at column 3, lines 3 to 11, are specifically directed towards the spark plug 13. Thus, the angle of the spray cloud of the auxiliary jets 10 and 10a is not symmetrical with respect to the longitudinal axis of the fuel injector. Figure 1 depicts this asymmetry by showing auxiliary jet 10a directed towards the spark plug 13. Figures 3 and 4 further depict this asymmetry, with respect to the longitudinal axis of the fuel injector, of holes 7 and 11.

Accordingly, the Sleffel reference does not identically disclose (or even suggest) the feature in which the first opening angle of the spray cloud along the first cross-

sectional plane bisecting the longitudinal axis of the fuel injector and the second opening angle of the spray cloud along the second cross-sectional plane bisecting the longitudinal axis of the fuel injector are symmetrical about the longitudinal axis of the fuel injector.

Accordingly, for at least these reasons, Sleffel does not anticipate claim 13, as presented, or its dependent claims 14 to 23.

As further regards claim 14, Sleffel does identically disclose (or even suggest) the feature of a clearance angle that is uniform along the circumference of the spray cloud. As explained above, the Sleffel reference, at Fig. 1, and at column 3, lines 59 to 66, provides no disclosure whatsoever that the combustion chamber is shaped in any related manner so as to provide a uniform clearance angle between the combustion chamber top and the spray cloud, as provided for in the context of claim 14. Figure 1 of the Sleffel reference concerns a non-uniform clearance angle between the combustion chamber top and the spray cloud.

Accordingly, for at least these additional reasons, Sleffel does not anticipate claim 14, or its dependent claims 15 to 23.

As further regards claim 15, the Sleffel reference does not identically disclose (or suggest) that the combustion-chamber top conically widens from the fuel injector along the second cross-sectional plane bisecting the longitudinal axis of the fuel injector. Still further, Fig. 1 does not identically disclose (or suggest) that the combustion-chamber top widens from the fuel injector along the first cross-sectional plane bisecting the longitudinal axis of the fuel injector at a greater gradient than along the second cross-sectional plane.

Accordingly, for at least these additional reasons, Sleffel does not anticipate claim 15, or its dependent claims 16 to 23.

As further regards claim 19, the Sleffel reference does not identically disclose (or suggest) any spacing of the sprays 9 or auxiliary jets 10 and 10a with respect to the surface of the piston cavity.

Accordingly, for at least these additional reasons, Sleffel does not anticipate claim 19.

As further regards claim 20, the Sleffel reference does not identically disclose (or suggest) any inner or outer fuel jets, but instead refers to sprays 9 and auxiliary jets 10 and 10a. The Sleffel reference does not identically disclose (or suggest) the relative depth of either sprays 9 and auxiliary jets 10 and 10a.

Accordingly, for at least these additional reasons, Sleffel does not anticipate claim 20, or its dependent claim 21.

As further regards claim 21, the Sleffel reference does not identically disclose (or suggest) any inner or outer fuel jets, but instead refers to sprays 9 and auxiliary jets 10 and 10a. Further, Sleffel does not provide any description of the relative diameters of primary spray holes 7 and holes 11, the widening of the diameters of primary spray holes 7 and holes 11, or the application of a different fuel pressure to primary spray holes 7 and holes 11.

Accordingly, for at least these additional reasons, Sleffel does not anticipate claim 21.

As further regards claim 23, the Office Action, at paragraph four (4), concedes that the Sleffel reference does not identically disclose (or suggest) that the fuel injector has 20 to 40 spray-discharge orifices.

Accordingly, for at least these additional reasons, Sleffel does not anticipate claim 23.

Withdrawal of this anticipation rejection is therefore respectfully requested.

With respect to paragraph four (4) of the Office Action, claims 23, 24, and 29 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Sleffel.

To reject a claim under 35 U.S.C. § 103(a), the Office bears the initial burden of presenting a *prima facie* case of obviousness. *In re Rijckaert*, 9 F.3d 1531, 1532, 28 U.S.P.Q.2d 1955, 1956 (Fed. Cir. 1993). To establish *prima facie* obviousness, three criteria must be satisfied. First, there must be some suggestion or motivation to modify or combine reference teachings. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). This teaching or suggestion to make the claimed combination must be found in the prior art and not based on the application disclosure. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991).

Also, as clearly indicated by the Supreme Court in *KSR*, it is "important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the [prior art] elements" in the manner claimed. *See KSR Int'l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727 (2007). In this regard, the Supreme Court further noted that "rejections on obviousness cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *Id.*, at 1396. Second, there must be a reasonable expectation of success. *In re Merck & Co., Inc.*, 800 F.2d 1091, 231 U.S.P.Q. 375 (Fed. Cir. 1986). Third, the prior art

reference(s) must teach or suggest all of the claim features. *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974).

Claims 23, 24, and 29 depend from claim 13, as presented, and they are therefore allowable for the same reasons, since the secondary reference does not cure – and is not asserted to cure – the critical deficiencies of the primary reference, as to claim 13, as presented.

As further regards all of the obviousness rejections, any Official Notice is respectfully traversed to the extent that it is maintained and it is requested that the Examiner provide specific evidence to establish those assertions and/or contentions that may be supported by the Official Notices under 37 C.F.R. § 1.104(d)(2) or otherwise. In particular, it is respectfully requested that the Examiner provide an affidavit and/or that the Examiner provide published information concerning these assertions. This is because the § 103 rejections are apparently being based on assertions that draw on facts within the personal knowledge of the Examiner, since no support was provided for these otherwise conclusory and unsupported assertions. (See also MPEP § 2144.03).

Withdrawal of the obviousness rejections is therefore respectfully requested.

In sum, it is respectfully submitted that claims 13 to 29 are allowable.

CONCLUSION

It is therefore respectfully submitted that all of the presently pending claims are allowable. It is therefore respectfully requested that the rejections (and any objections) be withdrawn, since all issues raised have been addressed and obviated. An early and favorable action on the merits is therefore respectfully requested.

Respectfully submitted,

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